INDUSTRIAL DIAMOND ABSTRACTS

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DIAMOND MINING AND INDUSTRY

Alluvial diamond production

S Africa Dept Mines. *Diamond News* etc 1958 Vol 21 (9) pp 39-40 (June)

Rough and uncut diamond production in March 1958 for Cape Province : 6,671.50 ct of total value £54,674 (163s 11d per ct). Private Estates : 483.00 ct of total value £7,153 (297s 0d per ct). Transvaal Province : 18,211.50 ct of total value £52,424 (57s 7d per ct). Thus total production amounted to : 24,366.00 ct of total value £114,251 (93s 9d per ct).

M *C 1.21*

Sintered carbide and diamond tools, sintered materials. Hartmetall- und Diamantwerkzeuge. Sinterwerkstoffe

Anon. *Draht* 1958 Vol 9 (7) pp 255-256 (July) (In German)

Tools displayed at the German Industrial Fair at Hannover are reviewed. Of particular interest are the sintered carbide wire drawing dies produced by J. Urbanek & Co, Frankfurt/Main, and diamond die polishing machine Type TNP 58, which works with 10 spindles and for bores of 0.10 to 3.0 mm diameter. Machines for working diamond dies are shown by Witels (Walter Wittig KG). Winter & Sohn show diamond tools and diamond dust and pastes of various meshes and concentrations. This firm's diamond files are specially made for the preparation and finishing of cutting, form, and die tools. Joisten & Kettenbaum, Bergish-Gladbach-Herkenrath display Hyprez diamond compounds and presses, as well as the Diprofil machine. 2 illustr.

A *B 14.2 : C 1.6 : C 12.0*

Mining miscellany

Anon. *Mining Journ* 1958 Vol 251 (6413) pp 76-77 (July 18)

In July of this year, the Liberian Government reopened diamond mines which have not been worked for some time. The granting of concessions on the Lofa and other diamond and gold bearing waterways is being considered.

W *C 1.22*

Report on the Industrial Fair in Hanover. Bericht von der Industrie-Messe in Hannover

Anon. *Draht-Welt* 1958 Vol 44 (13/14) pp 185-191 (July) (In German)

Amongst the items described are some diamond tools of Joh Urbanek & Co, Frankfurt/Main. Diamond drill crowns, grinding wheels, die polishers, and other tools were shown. New methods in manufacturing diamond dies of a diameter of 0.005 to 2.5 mm have produced the UR diamond die in a super steel for drawing all qualities of wire. Special machines are shown for the maintenance of all types of die tools for working diamond and sintered carbide. Diapur diamond paste is made in several mesh sizes for grinding, lapping, and honing steel and sintered carbide workpieces. 9 illustr.

A *B 14.2 : C 9.21 : D 8.0 : D 11.0*

My diamond territory; interview with Leonid Popov

Anon. *Kul't i Zhizn* 1957 (9/10) pp 52-53 (Sep-Oct) ; *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (1) p 308 (Apr) (Original in Russian)

X *C 1.24*

The building of a diamond mining industry in the Yakutsk USSR. Die Schaffung eines Diamantbergbaus in der Jakutischen ASSR

A. A. Gribin. *Gorny Zhurn* 1957 (11) pp 33-40 ; *Glueckauf* 1957 Vol 94 (25/26) p 868 (June 21) (In German, original in Russian)

The history of the diamond production in this region, the uses to which the stones are put, types of diamond obtained in the USSR, and the characteristics of Yakutsk diamonds are examined. Kimberlite is mined to a depth of 200 m. A yearly production of 1-2 million tons of rough material is possible.

A *C 1.24*

The manufacture and application of tungsten carbide in Australia

W. J. Kelsey. *IPE Journ* 1958 pp 91-104 (Feb) ; *PERA Bull* 1958 Vol 11 (7) p 224 (July)

Outlines the development, manufacture, standardization, tool fabrication, and applications of cemented [sintered] tungsten carbide in Australia.

X *C 12.0*

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Mr. H. F. Oppenheimer starts De Beers' new £1,500,000 treatment plant

Anon. *Diamond News* etc 1958 Vol 21 (9) pp 16-23 (June)

The opening of a new treatment plant at Kimberley. A survey of the methods and machinery employed is included. 6 illustr. *W* *C 1.3*

Problems in the petrology of diamond-bearing bedrocks in the USSR

A. P. Lebedev. *Izv AN SSSR Ser Geol* 1957 (11) pp 50-57 (Nov); *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3121 (Feb) (Original in Russian)

X *C 1.24*

The diamond industry 1956-1957

A. Moyar. *Gemmologist* 1958 Vol 27 (324) pp 134-138 (July)

Book, Vlaams Economisch Verbond, 31/VII Schoenmarkt, Antwerp, Belgium. 1958, 169 pp, illustr.

Book review. See *Ind Diamond Abstr* 1958 Vol 15 p A93 (June). *W* *C 1.5*

In a region of diamonds

V. Osipov. *Oktiabr'* 1958 Vol 35 (4) pp 173-182 (Apr); *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 928 (June) (Original in Russian)

X *C 1.24*

PHYSICAL, CHEMICAL, & MECHANICAL PROPERTIES OF DIAMOND AND OTHER HARD MATERIALS

The heat capacity of diamond between 0 and 1000° K

C. V. Raman. *Indian Acad Sci Proc A* 1957 Vol 46 (5) pp 323-332 (Nov)

The evaluation of the heat capacity of diamond on the basis of the theory of specific heats is put forward and discussed. When the results are compared with the latest experimental data, a striking over-all agreement emerges over the whole of the temperature range between 0 and 1,000 deg K. In the range of 50-150 deg K the experimental values are slightly in excess of the theoretical ones, the difference in value of Cp being a maximum of 0.007 at about 100 deg K, and ceasing to be noticeable both below 50 deg K and above 150 deg K. This is explained as due to the use in the experiments of industrial diamonds whose spectrographic behaviour is observably different from that of the ideal material on which theoretical calculations are made. 5 illustr, 3 ref, 1 table.

A *C 2.28*

The electrical, optical, and elastic properties of diamond type crystals. I & II

V. S. Mashkevich, K. B. Tolpygo. *Zhurn Eksp i Teoret Fiz* 1957 Vol 32 (3) pp 520-525; (4) pp 866-873; *Inst Met Journ* 1958 Vol 86 (10)—*Metall Abstr* 1958 Vol 25 (10) col 762-763 (June) (Original in Russian)

W *C 2.22 : C 2.25 : C 2.26 : C 2.5*

Genetic types of deposits of corundum as varieties of alumina

R. A. Musin. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 615 (June) (Original in Russian)

Book, Tashkent Izd-vo Akad Nauk Uzbekshoi SSSR. 1957, 152 pp. [Not in library of Ind Diamond Inf Bur].

X *D 14.1*

The etching of crystal cleavages. I. Mica

A. R. Patel, S. Tolansky. *Roy Soc Proc A* 1957 Vol 243 (1232) pp 33-40 (Dec 10)

Experiments are described in which hydrofluoric acid was used to etch muscovite mica, and the etch pits so formed are examined. Two types are found: small widely distributed pits, and relatively large localized isolated pits. On oppositely matched cleavages there is exact one-to-one correspondence between the localization and shapes of the isolated pits, but cleavage lines appear displaced, the width between the original position and the position after etching being roughly equivalent to the length of the isolated pits. It is established that the reason for this is the corrosion of the cleavage step, which is at the same rate as the corrosion of the pits. The mechanism of the isolated pits is discussed, and they are attributed to impurities. On occasional samples, winged pits are formed, and the wing is shown to be an air wedge within the body of the mica. 22 illustr, 4 ref, 1 tables.

A *D 2.3*

The etching of crystal cleavages. II. Diamond octahedral cleavages

A. R. Patel, S. Tolansky. *Roy Soc Proc A* 1957 Vol 243 (1232) pp 41-47 (Dec 10)

In optical study, it is found that light etch patterns, made by a flux of potassium nitrate at 500-600 deg C on diamond surfaces, are distributed in three ways: as random small pits, striking linear arrangements, and individual isolated pits usually larger than the others. When oppositely matched cleavages are etched, it is found that the etch patterns match and coincide to a remarkable degree. There is generally one-to-one correspondence between centres of isolated pits and of linear patterns. It is shown that cleavage ledges displace sideways owing to an alternative solution process which, in certain regions, takes place without the creation of visible etch pits. The observations can be accounted for by postulating that the cleavage cuts through crystal imperfections with each such imperfection becoming the nucleus of a pit. Pit concentrations found vary from 10^5 to over 10^7 sq mm, and some small regions are quite free from imperfections.

By etching cleaved blocks, a striking stratigraphy is revealed, and it is proved that the individual stratigraphical sheets go right through the whole crystal. The etch strata therefore reveal for the first time the whole growth history of the diamond. The implications of this are briefly discussed.

The etching reveals small ring cracks on the cleaved faces; these probably originate from the shock of cleavage. 16 illustr, 3 ref. *A* *D 2.3*

Polarised luminescence of coloured crystals

V. L. Vinetskii, M. F. Deigen. *Optika i Spektroskopiya* 1958 Vol 4 (1) p 60; *DSIR Transl Contents Lists Russ Period* 1958 (112) p 85 (July) (Original in Russian)

X *C 2.24*

Synthetic gemstones

R. Webster. *Gemmologist* 1958 Vol 27 (324) pp 124-129 (July)

The synthesising of diamond is dealt with at some length. Microscopic diamonds made by J. B. Hannay in 1880 have been examined and confirmed by F. A. Bannister and K. Lonsdale. H. Moissan's experiments which produced diamond in 1896 are described, and other early work is summarized. The GEC work is described, and the production of Borazon is also mentioned. Other subjects dealt with are the synthesis of ruby and fuzed rubies. (To be cont).

W *C 2.6*

The tetrahedral carbon atom and the structure of diamond

C. V. Raman. *Indian Acad Sci Proc A* 1957 Vol 46 (6) pp 391-398 (Dec)

The experimental evidence derived from the study of the vibration spectra of molecules and of their electron diffraction patterns shows beyond doubt that the four valencies directed outwards from a carbon atom are parallel to the four axes of a regular tetrahedron. This disposition is maintained even when the four atoms combining with the carbon atom differ enormously from each other, and thus the quartet of electrons in the L shell of a carbon atom as a result of their mutual interactions can set themselves so as to constitute a structure possessing perfect tetrahedral symmetry. Such a structure would be diamagnetic but not chemically inert. From these and other considerations it is concluded that there are two possible states of the carbon atom, and hence also four possible forms of diamond, of which two would be of true octahedral symmetry and two of lower or tetrahedral symmetry. This explains the varied behaviour of even ideal diamonds, especially their infra-red absorption spectra.

A *C 2.51*

Electronic colorimeter for diamonds

R. M. Shipley. *Gems & Gemology* 1958 Vol 9 (5) pp 136-142, 158 (Spring)

The development of an electronic colorimeter for diamonds is described, and earlier types are briefly mentioned. In the finally accepted model, the diamond is placed in an aperture in a slide, and covered with a baffle which excludes all light except that which passes directly through the diamond. A blue filter is inserted, and the slide is pulled out to permit a blank standard aperture to be placed in the light path. The meter is adjusted by means of rheostats to read 100. The slide is pushed in to place the diamond in the light path; the meter then shows the percentage transmission of the diamond for the blue filter. This value is then set on the integral computer. The filter control wheel is next rotated to bring a yellow filter into the optical system, and a variable neutral density filter, superimposed on the yellow one, is adjusted to reset the meter at 100. The slide is again moved to bring the diamond into the light path, and the resulting meter reading is transferred to the computer; this places the index on the computer over a scale of the American Gem Society colour values, thus giving a direct reading in terms of the AGS scale. 5 illustr.

W *C 2.24*

Synthetic emerald. Synthetischer Smaragd

W. F. Eppler. *Dtsch Goldschmiede Ztg* 1958 Vol 56 (7) pp 381-385 (July) (In German)

All experiments so far carried out have shown that synthetic emerald has so-called 'flags' as inclusions. Probable causes for the inclusions are discussed. Healing cracks have been noticed in easily crystallizing substances. In this case, alum crystals were examined, and the cracks were found to be formed during the crystal growth. Other crystals are examined, and theories are postulated concerning the healing cracks. 18 illustr.

A *C 2.61*

Absorption spectrum and colour of blue sapphire

S. P. Nautiyal, B. Mukherjee (Geological Survey of India, Calcutta, India). *Gemmologist* 1958 Vol 27 (324) pp 119-121 (July)

Two new bands at 3750 AU and 3880 AU are detected in the absorption spectrum of natural blue sapphire. Lattice defect is suggested as the cause of natural coloration from absorption, fluorescence, and trace element studies. 1 illustr, 4 ref, 1 table.

X *C 2.24*

Compound semiconductors

H. P. R. Frederikse. *Journ Met* 1958 Vol 10 (5) pp 346-350 (May)

A survey of the characteristics of compound semiconductors as deduced from measurements of their mechanical, optical, electrical, magnetic, and thermal properties. A useful table shows the semiconducting elements and compounds together with some of their properties. The table includes diamond and three semiconductors of the diamond-type structure, *ie* Si, Ge, and α-Sn. 7 illustr, 21 refs, 2 tables.

W *C 2.25 : C 2.26 : C 2.28*

Mineralogical tables. A classification of minerals on a crystal-chemical basis. Mineralogische Tabellen. Eine Klassifizierung der Mineralien auf kristallchemischer Grundlage

H. Strunz. *Erdoel & Kohle* 1958 Vol 11 (7) p 480 (July) (In German)

Book, Akademische Verlagsgesellschaft Geest & Portig KG, Leipzig. 1957, 3rd ed, 448 pp, illustr. Price: DM 34.— (In German)

This third edition of the well-known mineralogical tables is considerably enlarged. A new classification for phyllosilicates is given, and the section on clay minerals is expanded. [Book not in library of Ind Diamond Inf Bur].

A *C 2.7*

A model for solute diffusion in semiconductors with the diamond structure

R. A. Swalin (Minnesota Univ). *Journ Met* 1958 Vol 10 (2) p 93 (Feb)

Abstr of paper to AIME Annl Mtg, New York, Feb 16-20, 1958.

A theory for solute diffusion in crystals with the diamond type structure, *eg* germanium and silicon, is derived by consideration of the electrostatic and elastic interaction between solute ions and vacancies.

W *C 2.22 : C 2.25*

Rocks & Minerals : a guide to familiar minerals, gems, ores and rocks

H. S. Zim, P. R. Shaffer. *Sci Mthly* 1957 Vol 85 (6) p 329 (Dec)

Book, Simon & Schuster, New York. 1957, 160 pp, illustr. Price: $2.50.

The book is the 4th in the Golden Nature Guides Series, and contains pictures of specimens of rocks and minerals, diamonds, emeralds, and jade, as well as the ores from which gold, copper, uranium, and tin are extracted; lists of books, magazines, and exhibitions where specimens can be studied are provided. [Book not in library of Ind Diamond Inf Bur].

A *C 2.7*

Some features of the paragenetic relations of pyropes and diamonds

L. N. Zveder. *Izv Vost Fil An SSSR* 1957 (7) pp 22-25; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (10) p 2752 (Jan) (Original in Russian)

X *C 2.5*

TRADE LITERATURE HOLDINGS

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DIAMOND AND OTHER HARD MATERIALS IN INSTRUMENTS

Woman inventor says : I'll get £5 million. The sapphire needle case

Anon. *News Chronicle* 1958 (34953) p 5 (July 22)

In the Law Courts, the appeal judges ruled that Mrs M. L. Killick, of Brighton, was the inventor of a sapphire stylus for long playing gramophone records. They further judged that Pye Ltd had infringed Mrs. Killick's patent for the stylus (BP 603,606).

W *C 3.22*

Making and sealing synthetic sapphire windows to infra-red detecting cells

N. F. Beardsley, G. Greene. *USAF Aircraft Radiation Lab AF Tech Rep* No 6495, 1950 12 pp ; *Glastechn Ber* 1957 Vol 30 (4) p 154 ; *Soc Glass Technol Journ-Abstr*

Such windows must be permeable to light and infra-red rays, and, in addition, be capable of withstanding a high vacuum and temperatures up to 450 deg C. Salts such as NaCl and KBr are certainly transparent but do not possess sufficient resistance to heat and moisture. Synthetic thallium-bromide-iodide crystals cannot be fused with glass. Sapphires can be cut by means of normal glass-cutting saws and can be lapped with silicon carbide. For fine grinding, diamond dust (15-35 micron) with copper is recommended. Windows which were cut at right angles to the axis of the crystal had a tendency to fracture in the vicinity of the enclosing frame. If the cut is parallel to the axis, more material is required but the risk of fracture is avoided.

X *C 7.0*

Carbide-tipped scriber and chisel

Centrix Precision Products Ltd, Centrix Works, 116 Brighton Road, Shoreham-by-Sea, Sussex. *Machinery* (London) 1958 Vol 93 (2384) p 206 (July 23)

Carbide tipped scribers with right- and left-hand cutting points are produced for marking steel, and for marking and cutting sheet metal, plastics, asbestos, and glass. Carbide tipped chisels for masonry work are also available. 1 illustr. *W* *C 10.0*

HARDNESS AND WEAR TESTING

Testing the indentation and abrasion hardness of hard materials. Pruefung der Eindringhaerte und Schleifhaerte von Hartstoffen

P. Grodzinski. *Werkstattstechnik & Maschinenbau* 1958 Vol 48 (7) pp 364-372 (July) (In German)

The three different hardness tests are defined—surface hardness, hardness tensor, and hardness vector—and the two methods of hardness testing, *ie* indentation and abrasion, are examined in detail. One section deals with single conical indentation and double conical indentation, and the other section deals with flat grinding and double cone grinding. Diamonds are used in the experiments described. The article is based on one printed in *Ind Diamond Rev* 1956 Vol 16 pp 191-195 (Oct) ; 228-233 (Dec) ; 1957 Vol 17 pp 7-14 (Jan) ; 29-35 (Feb) ; 46-50 (Mar) ; 70-74 (Apr) ; 86-88, 90, 92-96 (May) ; 106-108, 110-114 (June) ; and 133-137 (July). 16 illustr, 15 ref, 1 table. *A* *C 4.0*

Graphic method for calculating the value of micro-hardness determined by the impression method

G. A. Il'inskii. *Zav lab* 1958 Vol 24 (3) pp 366-367 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 801 (June) (Original in Russian)

X *C 4.0*

Development of a theory of friction and wear

Anon. *Library of Congress Mthly List Russ Access* 1958 Vol 10 (10) p 2770 (Jan) (Original in Russian)

Book, Akademia Nauk SSSR, Institut mashinovedeniia, Moscow. 1957, 227 pp.

Proceedings of a conference on problems of a theory of friction and wear, Nov 15-17, 1954. [Not in library of Ind Diamond Inf Bur]. *X* *C 2.23*

New devices for studying the wear of materials and machine parts

M. M. Khrushchov. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 620 (June) (Original in Russian)

Book, Isd-vo Akad nauk SSSR, Moscow. 1957, 38 pp. [Not in library of Ind Diamond Inf Bur].

X *C 2.23*

Device [for] testing hardness of internal and external surfaces

A. A. Mizeri. *Zav lab* 1958 Vol 24 (3) pp 363-364 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 801 (June) (Original in Russian)

X *C 4.0*

Micro-hardness tester gives readings without microscope

Newage Industries Inc, 222 York Rd, Jenkintown, Pa. *Am Machinist* 1958 Vol 102 (15) p 103 (July 28)

A hydraulically loaded diamond indenter supplies a direct Vickers diamond pyramid hardness reading in 15 seconds. A Vickers hardness range of 100 to 1,000 is covered, and the tester is available with 1 or 2 kg loads. It is particularly suitable for testing small parts. 1 illustr. *W* *C 4.0*

Effect of the mass of specimens on hardness values determined by dynamic methods

B. A. Vandyshev. *Izm tekh* 1958 (2) pp 21-23 (Mar-Apr) ; *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 801 (June) (Original in Russian)

X *C 4.0*

USP 2,818,727 (Apr 25, 1956) **M. R. Euverard**
Hardness testing apparatus

The degree of indentation, *ie* the surface deformation, is measured by the resistance to sliding of the indenting body over the indented surface. The apparatus as shown in Fig 1 consists of a base 1 on which is clamped sample 15, *eg* a strip of leather or plastic, or any sheet with a protective or decorative coating whose surface hardness is to be tested. Indenting bodies 17 in block 16 under load 16a remain stationary until lever 6 is moved by handle 8 sufficiently to the left for the tension in chain 23 produced by weight 28 on chain 24 to overcome the friction and the force of gravity

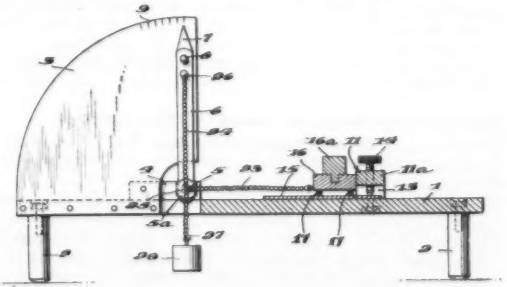


Fig 1. Hardness testing apparatus. USP 2,818,727.

holding the indenting body in the indentation. The position of the lever 6 at the moment when the movement of block 16 is detected is indicated on scale 9 and is a measure for the hardness. The indenter may be of stainless steel with a smooth spherical point of a radius of between 0.02 and 2.0 in., depending on the material to be tested. Indentation should not exceed 0.005 inch. (2 claims, 8 illustr). Ref cited : 1 USP ; 1 BP ; *Am Journ Phys* 1956. *J* *C 4.01*

USP 2,822,686 (Jan 21, 1955) **C. R. Campana**
Wear and abrasion testing machine

A jig carrying testpieces (plated articles like fountain pen clips or fountain pen barrels) is reciprocated on anti-friction rollers while abrasive carriers on deformable elastic cushions are held under a load against the testpiece from above. The electric motor for reciprocating the testpieces under the abrasive is connected with a timer, and the number of reciprocations is recorded by an odometer. A light source provides diffused light for examination of the testpieces during or after the test. (4 claims, 8 illustr). Ref cited : 7 USP.
J *C 4.01*

TRUING OF GRINDING WHEELS

Contour grinding of compressor vanes

C. H. Wick. *Machinery* (NY) 1958 Vol 64 (11) pp 121-128 (July)

The manufacture of hardened stainless steel compressor vanes for turbo-jet engines is described, together with details of wheel truing processes. Root forms—five flat surfaces—are ground on Ex-Cell-O two-wheel form grinders using vitrified bond aluminum oxide wheels of 80 mesh. The wheels are automatically diamond trued when the vane roots are within 0.004 in. of finished size. A three-wheel set-up is required in the tang forming operation, and the wheels are trued after grinding 10-12 vanes, using a Hoglund hydraulic contour wheel truer equipped with four diamonds The truing arrangement is shown diagramatically. At the start of the operation, two-knife-shaped diamonds are fed between the insides of the two outer grinding wheels and the sides of the centre wheel. The holder is then retracted and disengaged. The truing of the wheel peripheries is effected by two other diamonds whose action overlaps slightly, thus avoiding ridging and providing a smooth blending of trued surfaces. Finishing of the saddle and lug ends is done on Thompson model C surface grinders mounted in tandem, each of which is equipped with Hoglund hydraulic single diamond truers. As in the case of the smaller vanes, grinders for the larger ones are trued by four diamonds in a Hoglund truing fixture : two conventional, angularly mounted diamonds each true the periphery and inner face of one of the outer wheels, and part of the periphery of the centre wheel. Wheels used in the finishing of lug ends are trued in two different ways : on some machines, a Hoglund truer equipped with a two-diamond holder is used, each diamond truing one wheel. The other method employs a single diamond. Several of the diamond truing devices are illustrated. 13 illustr.
W *C 5.0*

Missile guidance requires machining to millionths

F. A. Cuthbertson (General Motors Corp, Milwaukee, Wis). *Machinery* (NY) 1958 Vol 64 (11) pp 129-135 (July)

Where the truing of ceramic and carbide wheels is critical, it is performed on a special machine equipped with a cup-shaped diamond wheel. 11 illustr.
W *C 5.0*

Production of toolroom lathes

Holbrook Machine Tool Co Ltd, Stratford, London E 15. *Machinery* (London) 1958 Vol 93 (2384) pp 176-188 (July 23)

The finishing of ways and other surfaces of beds, carriages, and cross-slides is performed on Churchill plano and slideway grinders. Each grinder possesses a hydraulically operated truing device of Holbrook design for providing the form required on the wheels for the various operations. When producing the V-form required for grinding bedways, left- and right-hand angular slides carry diamonds for truing the angular faces of the wheel, and a transverse slide is fitted with a diamond for truing the wheel periphery. A three-position lever selects the slide movements, and a second lever controls the starting and stopping of the slide. The truing feed-rate is steplessly variable, and is determined by the adjustment of a screw-operated throttle valve. 24 Illustr. *W* *C 5.0*

From one grinding specialist to another. Schleifspezialisten unter sich

Anon. *Schliff & Scheibe* 1958 (3) pp 14-16 (In German)

It is decided that much of the cost of diamond tools in use is due to bad truing and dressing, which causes excessive wear. Ten points are given on the truing of grinding wheels which should produce cost reductions.
A *C 5.0*

USP 2,819,708 (Dec 29, 1955) **E. V. Statia, sen**
Radius-to-tangent grinding wheel dresser

The diamond holder is reciprocated in a rotatable mount structure by a cable passing around a drum which in turn is mounted on a shaft carrying a hand wheel. The mount structure is also rotatable independently of the cable drum. Diamond 186 is adjusted along arm 136, which may be turned to and fro by hand wheel 74 so as to true wheel 20 to the adjusted radius. To true a cylindrical wheel face, hand wheel 74 is rotated to swing the mount structure 42, Fig 3, into a horizontal position so that carriage 126 will reciprocate in a horizontal path by rotating cable drum

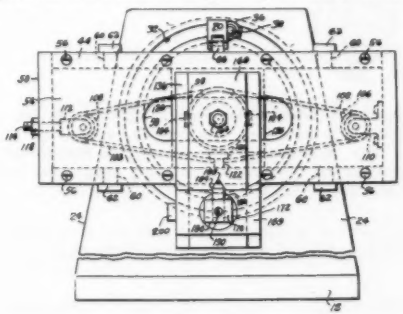


Fig 2 (above). Front elevation.

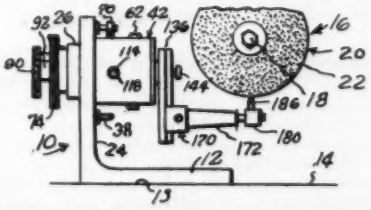


Fig 3 (right). Side elevation. USP 2,819,708.

93 through hand wheel 90. To cut a V-edge, mount structure 42 is rocked around its axis of rotation by hand wheel 74 to the desired angle. (12 claims, 6 illustr). Ref cited : 1 USP. *J* *C 5.01*

USP 2,821,974 (Feb 8, 1954) **J. Kisch, F. Brancato, Ex-Cell-O Corp**

Grinding wheel dresser

In the manufacture of transmission shafts, snap ring or similar grooves have to be ground on predetermined centres with a tolerance of the location of the centres of 0.003 to 0.005 in., and a tolerance on the width of the grooves of ±0.0001 inch. Normally a number of grinding wheels mounted on a single head are used. The truing arrangement consists of an arbor interchangeable with the workpiece between headstock and tailstock. Located along the arbor are disks carrying diametrically opposed truing bits (diamond points). These truing bits operate in pairs, *ie* one, the roughing bit, is normally spaced at a distance of 1/32 in. greater than that of the second, the finishing bit. The second diamond extends slightly further from the face of the disk than the first diamond. Chatter and wobble is avoided by alternately truing the opposed faces of a wheel and, therefore, the truing points are so set in the disks on both sides of the grinding wheel that they alternately engage the opposing faces of each wheel. (4 claims, 4 illustr). Ref cited : 12 USP.

J *C 5.01*

USP 2,822,797 (Oct 15, 1954) **O. C. Palmer**

Tool for use in horizontal and vertical wheel dressing

The grinding wheel truing device consists of a base 5 to be placed on the table of a surface grinder, projecting from which and integral with which is a slotted bar 6 arranged at an acute angle to the base on which a diamond holder 9 is adjustably clamped. The

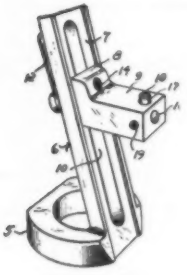


Fig 4. Wheel truing device. USP 2,822,797.

arrangement ensures maximum stability as the centre of gravity is advanced towards the centre of the base when the position of the diamond holder is raised along the bar. (2 claims, 2 illustr). Ref cited : 6 USP : *Am Machinist* 1924. *J* *C 5.01*

FINE BORING AND FINE TURNING OF METALS

Sintered carbide tools for precision machining. Hartmetallwerkzeuge fuer die Feinbearbeitung

H. J. Burmester. *Dtsch Uhrmacher Zeits* 1958 Vol 62 (7) p 343 (July) (In German)

Book, DEVA-Fachverlag. 54 pp, illustr. Price : DM 4.60 (In German)

Information is given about the types of sintered carbide, the chip-producing tools, and tools for chipless working. The book is quite comprehensive and the conclusions drawn may be applied to other tools which are not specifically mentioned. [Book not in library of Ind Diamond Inf Bur]. *A* *C 12.2*

A high precision lathe headstock

NV Philips Gloeilampenfabrieken, Eindhoven, Holland. *Philips Techn Rev* 1957/8 Vol 19 (2) pp 68-69 ; *Machinery* (London) 1958 Vol 93 (2386) pp 305-306 (Aug 6)

A special headstock has been designed for machining flat or profiled end surfaces, on such items as plastic lenses, to a high degree of accuracy. Reduced air pressure in the cavity at the end of the spindle causes the spindle end to be held in contact with the thrust block with constant force. A micrometer sleeve enables axial adjustment of the thrust block, so that the workpiece can be displaced by extremely small increments in relation to the tool. A special pulley is employed to enable work to be done without the transmission or vibration of the spindle drive. Tests were carried out with this equipment, in which a flat plastic disk was machined with a diamond tool having a nose radius of 0.02 mm, which was fed at the rate of 0.0009 mm. Close examination of a photo-micrograph taken shows that the groove width does not vary by more than 5 per cent. It is calculated that the axial displacement of the lathe spindle relative to the tool did not exceed 0.000005 mm. 3 illustr.

A *C 8.72*

Ways for increasing labour productivity by modernizing metal cutting tools

S. I. Abramson. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 618 (June) (Original in Russian)

Book, Mosk dom nauchono-tekhn propagandy im F. E. Dzerzhinskogo, Moscow. 1957, 38 pp. [Not in library of Ind Diiamond Inf Bur].

X *C 12.0*

Carbide tooling on automatics

British Timken Ltd, Duston. *Machinery* (NY) 1958 Vol 64 (8) pp 128-131 (Apr)

The application of tungsten carbide tools on single- and multi-spindle automatics is described. A template-controlled form grinder is used for sharpening the single-point turning tools. The wheel truing operation and the diamond truing tool used in the operation are described. 7 illustr. *W* *C 12.21*

Metal cutting tools ; kinematics and hydraulics

Yu. A. Shuvalov, V. A. Vedenskii. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 621 (June) (Original in Russain)

Book, Gos nauchno-tekhn izd-vo mashinostroit lit-ry. 1958, 242 pp. [Not in library of Ind Diamond Inf Bur].

X *C 12.0*

Cutting disks of sintered carbide — sintered carbide turning tools. Schneidplatten aus Hartmetall — Hartmetall-Drehmeissel

H. U. Rauhut. *Ind Anzeig* 1958 Vol 80 (60) p 914 (July 29) (In German)

A new classification system is being considered by the ISO Committee TC 29 tools, which will divide the machining materials into three main groups : P for long chip forming materials, M for long and short chip forming materials, and K for short chip forming materials. Further minor divisions will be made within these according to the application of the materials in machining processes, and will be shown by a two digit figure after the initial letter. The application of the new classification to DIN standards is briefly discussed. 2 ref. *A* *C 12.2*

New design of cutting tools

G. N. Chernavskii. *Vestnik Mash* 1958 Vol 38 (7) p 59 (Original in Russian)

X *C 12.0*

Precision of machining on boring machines
V. I. Ishutkin. *Stanki i Instr* 1957 Vol 28 (9) pp 26-27 (Sep); *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (10) p 2754 (Jan) (Original in Russian)
X *C 6.0*

Device for determining deformation zones in metal cutting
B. G. Levin. *Vestnik Mash* 1958 Vol 38 (7) p 63 (Original in Russian)
X *D 15.0*

Ceramic tool geometry. II
H. D. Moore, D. R. Kibbey. *Automatic Machining* 1958 pp 42-45 (Apr); *PERA Bull* 1958 Vol 11 (7) p 224 (July)
Discusses the results of life tests on ceramic tools in which the effect of rake, land dimension, and relief angle were determined. *X* *C 12.0*

Effect of lubrication coolants on temperature and force of cutting
B. M. Orlov. *Vestnik Mash* 1958 Vol 38 (7) p 64 (Original in Russian)
X *C 6.0*

Computer control of machine tools. I
D. T. N. Williamson (Ferranti Ltd, Edinburgh). *Control* 1958 Vol 1 (1) pp 19-24 (July)
A description of the Ferranti system of machine tool control, based on a central computing service which supplies magnetic tapes to users of control equipment which contains only servomechanisms. 6 illustr, 2 ref.
W *D 15.3*

How to increase the durability of cutting tools
B. P. Zakharov, G. L. Kuruklis. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 622 (June) (Original in Russian)
Book, Gos nauchno-tekhn ixd-vo maschinostroit lit-ry. 1957, 39 pp. [Not in library of Ind Diamond Inf Bur].
X *C 12.0*

CUTTING AND MACHINING OF GLASS

Some comments on indentation tests on glass
R. W. Douglas (Sheffield Univ). *Journ Soc Glass Techn* 1958 Vol 42 (206) pp 145-157T (June)
Indentation tests were carried out using a small diamond pyramid, with an angle of 136° between opposite faecs, lightly pressed into the surface of a piece of glass. A permament indentation was observed, showing that flow of the glass had taken place at room temperature. It was also found that cracks were formed if the load on the diamond was 140 g or over. The flow of glass at room temperature and the correlation between viscosity and diamond pyramid hardness are discussed. It is stated that the higher the fictive temperature of the glass, the greater is the viscosity at room temperature. Finally, indentation tests with spherical indenters are considered. 5 illustr, 15 ref.
A *C 4.0 : C 7.0*

Conveyor for cutting shaped glass
M. I. Levchenko, N. A. Vinogradov. *Steklo i Keram* 1957 Vol 14 (7) pp 25-27; *Am Ceram Soc Journ & Abstr* 1958 Vol 41 (7) p 169 (July) (Original in Russian)
The machine is briefly described.
X *C 7.0*

Cutting the glass of fashion : engraving skills revived
Anon. *Manchester Guardian* 1958 (34854) p 5 (July 22)
A description of the four principal methods of glass engraving is included in an article which surveys the renewal of interest in the art. The methods are diamond-point engraving, engraving by means of a small copper wheel charged with an abrasive suspension, sand-blasting, and wet or dry etching. Prominent engraving artists mentioned include Laurence Whistler, Anthony Pope, and Miss E. J. Webster. An example of work by each of the latter two is illustrated. 2 illustr.
W *C 7.0 : C 10.0*

Effect of block working on surface of optical quality
A. S. Raghavan, S. Hariharan. *Journ sci industr Res* 1957 Vol 16A p 574; *Journ Sci & Ind Res A* (India) 1958 Vol 17A (5) p 27 (May)
The behaviour of the surface of a 6 in. optical disk when in and when taken out of a block of plaster of Paris-lime compound is described. The results indicate that the quality of the surface of optical disk when final figuring is done in the block is liable to alter when it is removed from the block. In such cases the final figuring of the surface is best done when it is out of the block. *X* *C 7.0*

Glass cutting wheel
N. Sieder. *Silikat Tech* 1957 Vol 8 (6) p 244; *Soc Glass Technol Journ—Abstr* (Original in German)
Consists of a steel plate 2-4 mm thick, 200-400 mm diameter, serrated every 32 mm to a depth of 15-18 mm. The cutting compound consists of SiC in bakelite resin which is applied to the periphery of the wheel. The wheel is stated to have three times the life of a diamond-impregnated wheel of similar dimensions.
X *C 7.23*

Machine tool for cutting circular glass
M. I. Levchenko. *Steklo i Keram* 1957 Vol 14 (8) pp 22-23 (Aug); *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (10) p 2776 (Jan) (Original in Russian)
X *C 7.0*

MACHINING OF STONE, ETC

Diamond-coated saws
O'Rourke Diamond Co Inc, 11423 Van Owen St, North Hollywood, Calif. *Mod Plastics* 1958 Vol 35 (6) p 178 (Feb)
It is briefly stated that the company now manufactures diamond saws in diameters up to 24 inches. Over 100 types are available. *W* *D 8.0*

USP 2,822,648 (Oct 15, 1956) **L. H. Metzger, V. J. Fantozzi, Super-Cut Inc**
Rotary tool mounting and method of assembling the same
This mounting is intended primarily for use with circular diamond saws for hard stone, *eg* marble and concrete. Such saws have usually a central aperture to fit the drive shaft where it is clamped between a pair of collars. A large number of machines now in use have driving shafts of varying sizes, and the saw blades have to be produced and kept in stock with a variety of different centre holes. The new mounting provides adapters with apertures to fit the various shafts, while the outer dimensions remain the same so as to require only a standard saw body which can be used without regard to the size of the driving shaft. The central aperture of the standard blade is

polygonal, *eg* square, the adapter is a flat metallic plate fitting into the aperture in which it is maintained by friction and by forcing some metal of the saw body over the edges of the adapter to grip it securely from all sides. The adapter has a central opening for the drive shaft and may be notched for a driving key. (10 claims, 10 illustr). Ref cited : 5 USP.

J *C 8.01 : D 8.01*

GEM POLISHING

Ascertaining the nature and extent of damage or inherent flaws in gemstones

G. R. Crowningshield. *Gems & Gemology* 1958 Vol 9 (5) pp 131-133 159 (Spring)

A description is given of methods employed by the Gem Trade Labs of the Gemological Institute of America. Diamonds are among the gems considered.

W *D 15.0*

Deburring tool works in $\frac{7}{8}$ in. openings

Ellison Engg Co, 4530 San Fernando Rd, Glendale 4, Calif. *Grinding & Finishing* 1958 Vol 3 (10) p 56 (Feb)

Claimed to be suitable for, among other things, gem polishing and dental laboratory work, the Air Burr tool rotates at 150,000 rev/min on an air pressure of 15-100 lb/sq inch. The narrow head permits it to be used in a $\frac{7}{8}$ in. hole. 1 illustr.

W *C 7.0 : D 4.0*

Stars that shine forever

Anon. *Diamond News* etc 1958 Vol 21 (9) pp 10-11, 13 (June)

A new film, 'Stars that shine forever', has been produced jointly by the Gustave Katz Diamond Cutting works, where much of the film was made, and the J. C. Keppie Company. The film traces the cutting and polishing of diamonds. 5 illustr.

W *C 0.3 : D 4.0*

ROCK DRILLING

New developments in diamond products using metal powders

L. Kuzmick (J. K. Smit & Sons, Inc, USA). *Metal Powder Association Proc 13th Annual Mtg* 1957 pp 88-96 (Apr 30 - May 1) ; *Metal Powder Report* 1958 Vol 12 (7) p 123 (Mar)

Recent developments in diamond bits for mining and oil-well drilling, and in diamond tools, are described. The change from mining bits containing about eight relatively large carbonado stones to those with 100-200 boart stones, is explained, as also is the change from hand-setting to mechanical. Diamonds have been used successfully in oil-well bits only since the introduction of metal powder matrices. The author's firm has adapted its sintered carbide type matrix for use in oil-well drilling. The author concludes with some notes on diamond truing tools and metal-bonded diamond wheels.

A *C 5.0 : C 9.21 : D 8.0 : D 13.5*

Detachable drilling bits with a discontinuous edge

V. F. Zinin. *Gornyi Zhurn* 1958 (4) p 64 ; *DSIR Transl Contents Lists Russ Period* 1958 (112) p 47 (July) (Original in Russian)

X *C 9.2*

An automatic drilling machine, B-35, for exploratory drilling down to 3,000 m. La sondeuse autonome B-35 pour les forages de reconnaissance atteignant 3000 m

E. S. Bubnov, N. V. Medvedev. *Prospection & protection du sous-sol* 1958 (4) pp 54-59 (Apr) (In French, original in Russian)

The drill is described in detail, and suitable crowns, *ie* diamond crowns with a diameter of 127/86 mm and stones weighing $\frac{1}{4}$ to $\frac{1}{2}$ ct, are proposed ; the total weight of diamond in one crown is 69 carats. Hard metal tipped crowns are also considered. 4 illustr, 5 tables.

A *C 9.0*

Effect of pressure on rock drillability

J. R. Eckel (Humble Oil & Refining Co). *Journ Petroleum Technol* 1958 Vol 10 (1)—*AIME Petroleum Trans* 1958 Vol 213 pp 1-6 (Jan)

A laboratory drilling rig, using diamond, smooth, conventional, and ringed microbits, was used to ascertain the effect of pressure on rock drillability. Only preliminary testing was carried out with the diamond bit, as the design did not permit a constant rate of circulation while drilling. Tests showed a good correlation between field and laboratory results. 23 illustr, 2 ref.

W *C 9.0*

Development and field testing of a core barrel for recovering unconsolidated oil sands

A. B. Hildebrandt, H. C. Bridwell, J. M. Kellner (Carter Oil Co). *Journ Petroleum Technol* 1958 Vol 10 (1) pp 51-53 (Jan)

A description is given of a rubber-sleeve core barrel developed for unconsolidated oil sand recovery. Research into the development of a suitable diamond bit is being conducted in conjunction with a diamond bit manufacturer, and three suitable diamond bits are shown. Two of the bits have recovered a 100% core, and further development is being carried out in order to achieve consistent results. 2 illustr, 1 table.

W *C 9.0*

A method of determining probable drillability by means of small-diamond drill crowns. Méthode de détermination de la forabilité probable à l'aide de couronnes à petits diamants

V. I. Morozov. *Prospection & protection du sous-sol* 1958 (4) pp 21-23 (Apr) (In French, original in Russian)

The superiority of diamond over other drilling materials is demonstrated, and a formula is worked out by which the relation between the speed of penetration, the rotation speed of the instrument, and the pressure exercised on the latter can be calculated. 1 illustr, 2 tables.

A *C 9.21*

The diamond bit seems to be the best tool for turbo-drilling in medium-hard and hard ground. Eignung des Diamantmeissels fuer das Turbinenbohren in mittelhartem bis hartem Gestein

G. Vie. *Techniques Applications Pétrole* 1958 Vol 13 p 5539 ; abstr *Erdoel & Kohle* 1958 Vol 11 (7) p 471 (July) (In German, original in French)

After many unsuccessful efforts, the firms of Neyrpic and Christensen have together succeeded in producing a diamond bit which is especially suitable for turbo-drilling. The cost of boring is reduced and the bits have a long life. Operations with rock bits and diamond bits in rotary and turbo-drilling are compared.

A *C 9.21*

The results of the first use of Soviet diamonds for boring exploratory drill holes. Les premiers résultats de l'emploi des diamants soviétiques pour le forage de puits de reconnaissance

G. K. Volosjuk, F. A. Shamshev. *Prospection & protection du sous-sol* 1958 (4) pp 19-21 (Apr) (In French, original in Russian)

Soviet diamonds were first used for exploratory drilling in 1957. Drill crowns set with small diamonds, one with imported stones and another with Soviet stones, were used to drill rocks of categories IX and X, and the results were compared. ZIF-300 type drills were used. 1,058.5 m were drilled with Soviet diamonds, and 804.9 m with imported stones. The speed with Soviet stones was 1.11 m/hr, and with imported diamonds it was 1.03 m/hour. Further data concerning speed and pressure in drilling are given. Diamond drilling was found to be more efficient and cheaper than shot boring. Another prospecting party has obtained successful results in boring rocks of categories XI and XII. 2 illustr.

A *C 9.21*

USP 2,821,364 (July 1, 1954) **G. Godfrey**

Two-way bit

Easy withdrawal of a rock drill is ensured by the arrangement of backwards-working cutting edges of lesser diameter, integral with the drill body, for removing obstructions formed during drilling in the drilled hole. The difference between the diameter of the main cutting edges, *eg* diamond inserts in steel shanks, and that of the auxiliary cutters for working in the opposite direction (outward ; upward) may be 0.05 inch. (1 claim, 4 illustr). Ref cited : 4 USP.

J *C 9.01*

WIRE DRAWING

The calculation of drawing force and die pressure in wire drawing

P. W. Whitton (ICI). *Inst Met Journ* 1958 Vol 86 (9) pp 417-421 (May)

Various wire drawing theories are examined in the light of recently advanced knowledge of the values for the coefficient of friction between the drawn wire and the die. Differences amounting to ±20% between observed and predicted values of drawing force and mean die pressure are given in the most accurate theories. Theories taking account of the effect of redundant work are unsatisfactory, although they constitute an improvement on those assuming homogeneous deformation. An empirical expression is presented which permits rapid calculation of drawing forces to within ±10% for both annealed and prestrained wire. 5 illustr, 14 ref, 5 tables.

W *C 11.0*

Automatic control of wire drawing machines

Ya. L. Frankfurt. *TSvet met* 1954 Vol 27 (3) pp 55-63 (May-June) ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (10) p 2888 (Jan) (Original in Russian)

X *C 11.0*

Mechanical equipment of wire drawing and strip rolling mills

A. M. Kogos. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 620 (June) (Original in Russian)

Book, Gos nauchno-tekhn ixd-vo lit-ry po chernoi i tsvetnoi metallurgii, Moscow. 1957, 338 pp. [Not in library of Ind Diamond Inf Bur].

X *C 11.0*

GRINDING AND POLISHING OF HARD METALS

Tests show superiority of man-made industrial diamonds for grinding wheels

N. A. Matthews, N. Leventhal (Gen Electr Co). *Machinery* (NY) 1958 Vol 64 (8) pp 122-127 (Apr)

Tests are described which were used to evaluate the comparative efficiency of natural ($2.80/ct) and synthetic ($3.48/ct) diamond grinding wheels. Results showed that resinoid- and vitrified-bonded synthetic grinding wheels out-performed the natural product on carbides. The synthetic diamonds were, however, unable to withstand the high feed rates and pressures of cut-off applications, and resinoid- and metal-bonded synthetic diamond cutting disks produced inferior results to natural diamond in the cutting of glass, sintered carbide, tile, and granite. Results with metal-bonded synthetic diamond grinding wheels were inferior to those achieved with natural stones, except in the case of the electrolytically assisted grinding of tungsten carbide. 7 illustr, 1 table.

W *C 2.6 : D 8.0*

Microstics grinding arbors

Microstics Ltd, 218 Mare Street, London E 8. *Machinery* (London) 1958 Vol 93 (2386) pp 304-305 (Aug 6)

A new range of grinding arbors covers wheel diameters from 1/16 to 1¼ in., with shank diameters from ⅛ to ½ an inch. A special abrasive mixture is employed, with a bonding temperature that does not affect the metal of the shank. The abrasive is deposited directly on the shank and bonded in position. The shank is normally knurled slightly, but an effective bond can be obtained on a plain surface. When the abrasive has worn thin, it can still be used and trued without cracking off the supporting shaft. It is shock resistant, and will not crack if dropped on to a concrete floor. Performance figures are given. 2 illustr.

W *C 5.0 : D 8.0*

Finishing and rectifying centre holes by means of conical grinders. Glaetten und Berichtigen von Zentrierbohrungen durch Schleifkegel

A. Schatz. *Werkstattstechnik & Maschinenbau* 1958 Vol 48 (7) pp 349-354 (July) (In German)

Different machines and methods for the operation are described in detail. The truing of the grinding cone is a matter of importance and may be done by means of a special attachment which entails the use of a diamond for truing. This attachment is positioned in such a way that when the centre hole finishing is complete, then the grinding cone, as it moves back into its resting position, passes the truing diamond, which swings along a specified course so that the point angle of the grinder is formed. As the diamond holder swings out, as the grinding spindle is lowered, a catch on it touches an infeed control, and the spindle is pushed back in its sleeve to the prescribed position, so that the diamond always penetrates the desired depth into the grinding point which gradually grows shorter with each truing operation. The disadvantage of the diamond for truing is that the grinding point becomes too steeply pointed very quickly and breaks, so that many manufacturers prefer to use a truing wheel. 20 illustr.

A *C 5.0*

Large milling cutters designed for ease of maintenance and setting

Anon. *Machinery* (London) 1958 Vol 93 (2386) pp 323-325 (Aug 6)

The re-sharpening of solid carbide cutters in a special fixture is described. 4 illustr.

A *C 6.0*

Grinding reamers. Schleifen von Reibahlen

Anon. *Technik & Betrieb* 1958 Vol 10 (7) yellow insert page (July) (In German)

Practical instructions are given on the method of sharpening the chamfer, truing a small nominal diameter, and setting up a grinding wheel for sharpening. A 30 micron mesh diamond grinding wheel is recommended for honing easily accessible surfaces on the cylindrical part of the reamer. A table shows the appropriate angles for grinding different materials, and the strength and Brinell hardness of each material. 3 illustr, 1 table.

A *C 5.0 : C 12.0 : C 13.3*

How tight should a flange be made ? Wie stark darf man einen Flansch anziehen ?

Anon. *Schliff & Scheibe* 1958 (3) pp 10-13 (In German)

The strains in grinding machines and their effect on faults in the apparatus are discussed. Information on the tightening up of the screw, the balancing of wheel and flange, and the use of the torque key is given. 5 illustr. *A* *C 5.0*

Flat grinding . . . and what one should know about it. Flachschleifen . . . und was man davon wissen sollte

Anon. *Schliff & Scheibe* 1958 (3) pp 1-9 (In German)

General facts about flat grinding are given, with information about the different forms of machine which can be used. 6 illustr, 1 table.

A *C 5.0*

Centreless cylindrical lapping-machine. Spitzenlose Rundlaeppmaschine

Hommelwerke GmbH, Mannheim-Kaefertal. *Werkstatt & Betrieb* 1958 Vol 91 (7) p 444 (July) (In German)

The new machine has two pairs of rollers, one for rough lapping and the other for finishing. A 0.37 kW motor is used to drive them. The machine will work on a piece of 0.2-150 mm diameter, and rollers can be moved in certain directions, and easily taken out for sharpening. 2 illustr. *A* *C 13.2*

Modern techniques in lapping cutting tools equipped with hard alloys and mineral ceramic bits

B. S. Korshunov. *Trudy Sem Po Kach Poverkh* 1957 (3) pp 223-235 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3026 (Feb) (Original in Russian)

X *C 13.2*

Grinding and finishing of cutting tools

B. S. Korshunov. *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3026 (Feb) (Original in Russian)

Book, Vses uchebno-pedagog, izd-vo Trudrezervizdat, Moscow. 1956, 126 pp. [Not in library of Ind Diamond Inf Bur]. *X* *C 12.21*

Study of the economics of fine grinding

A. A. Matalin. *Vestnik Mash* 1958 Vol 38 (7) p 67 (Original in Russian)

X *C 5.0*

Tools, holding fixtures, and other workshop aids. Werkzeuge, Spannzeuge und andere Betriebshilfsmittel

H. Philipp, M. Schultheiss, W. Eickhoff. *Werkstatt & Betrieb* 1958 Vol 91 (7) pp 394-400 (July) (In German)

Among the many instruments reviewed are grinding machines of various kinds made by the firms of C. & E. Fein, Stuttgart ; AEG ; Robert Bosch GmbH, Stuttgart ; and Scintilla AG, Solothurn, Switzerland. 21 illustr. *A* *D 15.0*

Abrasive costs on carbide cut 40% !

Reliance Electric & Engg Co. *Grinding & Finishing* 1958 Vol 3 (10) p 29 (Feb)

A description of the change from 'green grit' and diamond grinding of over 70,000 single point carbide tools a year to electrolytic grinding. Eighty to 90% of the abrasive action in the operation has been eliminated. 1 illustr. *W* *C 12.9*

Electro-polishing metals. Das Elektropolieren von Metallen

M. Straschill. *Draht-Welt* 1958 Vol 44 (13/14) pp 177-179 (July) (In German)

The method, effect of polishing, electrolyte, composition of solution, and setting up of the baths are described. It is pointed out that in this method of polishing, the hardness of the matter to be polished is of little importance, as the roughness is dissolved away, and that the method can be applied to workpieces of angular shapes on very hard metals ; *ie* those that would be difficult to polish by a grinding method.

A *C 12.9*

BP 797,569 **Cincinnati Milling Machine Co** (Aug 8, 1955—conv date, USA)

Process of continuously producing ground workpieces and a centerless grinding machine

The process refers to the grinding by throughfeed methods of a series of relatively thin articles such as bearing races, piston rings, et cetera. One of the difficulties of maintaining a continuous progression of these articles is the tendency of leading articles to advance at an increasing rate of speed, thereby losing contact with the next article which, in the absence of lateral support, may become displaced in the grinding throat, thus impairing the accuracy of the finished product. Special pusher mechanisms complicate the design and operation of the machinery. The difficulties are overcome by a new arrangement of the regulating wheel, trued in a certain geometrical relationship with a gradually decreasing diameter from front to rear. The amount of the decrease is controlled by the angle of inclination of an associated diamond truing device combining a longitudinal movement of the diamond along the regulating wheel with a radially varying amount from the axis of the regulating wheel. (7 claims, 6 illustr). *J* *C 5.01*

USP 2,819,572 (Aug 28, 1956) **T. G. Lewis, E. I. Du Pont de Nemours & Co**

Lapping method and apparatus

High quality surface finish with good dimensional control is difficult to achieve on workpieces of alloy steels with high tungsten, vanadium, and chromium content. Such workpieces of *eg* high chromium stainless steels, are polymeric material film casting wheels, polishing rolls for coated fabrics, etc, where high surface finish is essential. The difficulties are caused by non-homogeneities to abrasion through inclusions which are harder (carbides) or softer than the primary metal constituent. It has been found that these difficulties can be overcome and finishes of 0.3 to 0.4 micro-in. rms obtained, with the practical elimination of inclusion dislodgement (leading to scratches), in the course of the lapping operation. This is done by forcing diamond dust abrasive against the work with a balsa wood lap. The surface of the wood block has to be treated with resins extracted from *lignum vitae*, and a certain pressure and high surface speed has to be maintained throughout. The lap is preferably annular, and the ends of the wood fibres make up the working face contacting the work. (6 claims, 4 illustr). Ref cited : 3 USP.

J *C 13.01*

USP 2,820,330 (June 29, 1955) **R. A. Mahlmeister, Sheffield Corp**

Machine tool

Truing diamonds are associated with a conveyor for moving articles continuously into the grinding zone. After a certain number of articles have been ground, the grinding wheel or wheels are automatically advanced after the last article has been ground, and immediately before contact is made between the grinding wheel or wheels and the diamonds, so that the wheels are trued to the desired diameter corresponding with their new position before a further article is moved into the grinding zone. In the example described in the specification, a carrier is shown to move pinions between two opposed grinding wheels which grind oil grooves on each of the end faces of the pinions. Accurate control of the contour of the wheels and their distance from one another is effected by two shaped diamonds on their carrier wheel coming into operation immediately after a feed of the grinding wheels towards each other. (4 claims, 9 illustr). Ref cited : 6 USP ; 1 BP.
J *C 5.01*

NEW MACHINING METHODS

Magnetostrictive ultrasonic vibrators, their use in technical practice, and some examples of technical applications. Magnetostriktive Ultraschallschwinger, ihre Verwendung in der Technik und einige technische Anwendungsbeispiele

Anon. *Nickel Ber* 1957 Vol 15 (11) pp 251-254 ; *Techn-Wiss Ber Osram* 1957 Vol 30 (11/12) p 344 (Dec) (In German)

For ultrasonic drilling, a drilling head is applied to the workpiece with a weak solution of boron carbide ; the outline obtained is that of the drilling head. The experiment lends itself particularly to the production of any desired shape in sintered carbide cutting disks.
A *C 12.9*

Electric spark machining of current-carrying materials

B. R. Lazarenko, N. I. Lazarenko. *Library of Congress Mthly Index Russ Access* 1958 Vol 11 (3) p 620 (June) (Original in Russian)

Book, Izd-vo Akad Nauk SSSR, Moscow. 1958, 183 pp. [Not in library of Ind Diamond Inf Bur].
X *C 12.9*

Ultrasonics in precision machining. Ultraschall in der Feinbearbeitung

W. Lehfeldt. *Dtsch Uhrmacher Zeits* 1958 Vol 62 (7) p 343 (July) (In German)

Book, DEVA-Fachverlag. 88 pp, illustr. Price : DM 5.80. (In German).

The range of ultrasonic applications is described, including polishing, boring, engraving, and welding. [Book not in library of Ind Diamond Inf Bur].
A *C 12.9*

Spark erosion, a modern method of machining metals. II. Die Funkenerosion, ein neuzeitliches Metallbearbeitungsverfahren. II

R. Wahl. *Gold & Silber* 1958 Vol 11 (7) pp 33-36 (July) (In German)

The physical process of spark erosion is examined, and a spark erosion machine, the Elbomat is described. Samples of the work produced are shown. 8 illustr.
A *C 12.9*

LITERATURE REQUESTS
When applying for the loan of literature abstracted in this journal, please quote the title of the article, the name of the author, and the number of the page on which it appeared.

BP 796,984 **Firth Sterling Inc**
(Aug 30, 1955, and Apr 20, 1956—conv dates, USA)

Spark machining

One of the problems of spark machining by transverse movement of the electrode in the shape of a grinding wheel across the workpiece surface consists in retaining the dielectric liquid on the surface of the wheel. Continuous liquid feed generates a spray at the spark cutting region, and obscures the view where maximum sight is required. The possibility of ignition of the mist thrown away from the wheel creates a severe fire hazard. It has been found that by providing the dielectric as a semi-solid and by using a wheel (electrode) of a porous material, the problem can be solved. Semi-solid (microcrystalline) wax is continuously wiped against the moving wheel from a holder. The wheel is made of cast iron and may have one or more spiral grooves in its workpiece engaging surface. (13 claims, 5 illustr).
J *C 12.01*

USP 2,818,686 (Feb 28, 1956) **M. E. Weiss, Gulton Industries Inc**

Rotating ultrasonic drill

For drilling hard and brittle materials such as glass, ceramics, sapphires, diamonds, and tungsten carbide, axial ultrasonic cutting is employed in conjunction with rotational drilling and an abrasive slurry. The rotating drill body is an electro-mechanically sensitive hollow cylinder of barium titanate serving as the transducer, to which a horn is attached supported at its nodal surface and carrying the tool point at its lower small end. A motor is mounted at the upper end. Ultrasonic excitation causes the transducer to vibrate in its longitudinal mode which is transmitted to the horn and tool point. The abrasive particles fed to the point are driven against the workpiece at a high velocity, and the work is eroded directly under the tool end. (6 claims, 1 illustr). Ref cited : 3 USP.
J *C 7.01 : C 8.01*

POWDER TECHNOLOGY

Liquids for particle size analysis by sedimentation method

G. D. Joglekar, B. R. Marathe (Nat Phys Lab, New Delhi). *Journ Sci & Ind Res* (India) 1958 Vol 17A (5) pp 197-203 (May)

The available data on liquids suitable for a variety of powdered materials are presented, and the factors involved in their selection are assessed on the basis of the physico-chemical characteristics of the liquids and the powders. The methods commonly employed for the dispersing of powders in liquids are reviewed, together with the tests employed for evaluating the degree of dispersion of the particles in a given quantity of the powder in the liquid. In sedimentation studies, Stokes' Law is used to evaluate the size of the particles, but the conditions employed in Stokes' Law are not generally satisfied. Diamond powder is included in a list of liquids and dispersing agents for different materials. 1 table, 65 ref.
W *D 7.5*

Research on the technical aspects of dust microscopy with phase contrast and dark field limit. Zur Technik der Staubmikroskopie mit Phasenkontrast und Grenzdunkelfeld

K. G. Schmidt, G. Heidermanns. *Staub* 1958 Vol 18 (8) pp 236-246 (Aug 1) (In German)

A method is described for determining the refraction coefficent of dust grains by means of colour filters, and by phase contrast with the dust in liquids of known refraction coefficient and dispersion. 10 illustr, 15 ref.
A *D 15.2*

DIAMOND TOOL PRODUCTION AND DIAMOND RECOVERY

USP 2,818,850 (July 6, 1955) **H. Schwartzkopf, J. G. van Otterloo, Consolidated Diamond Tool Corp**

Cut off blades for abrasive bodies and their production

Sheet metal disks, of a thickness of 1/16 to 3/16 in., are used with cutting segments with slightly greater thickness around their periphery which consists of diamond dust embedded in or bonded with bronze or a nickel copper alloy. Difficulties are encountered in sintering the mixture of diamond and metal powder because of the shrinkage of the metal which leads to deformation and cracking as the diamond powder resists shrinking. A series of cutting disks of different diamond content and different radial depths was thus required for different materials so as to keep shrinkage below 2%. It has been found that diamonds of 20-40 mesh size embedded in a matrix of tungsten carbide-cobalt or tungsten carbide-nickel, with 30-70% tungsten carbide, provide a suitable cutting segment for cutting any hard material. The segment is free of diamond particles in the region where it is joined to the steel disc. For cutting green concrete it is advantageous to make the inner junction edge of the cutting segments in the form of several straight or concave edge portions, and to shape the outer edge of the disk in the same manner. This prevents wear along the entire peripheral outer edge of the disk. (9 claims, 8 illustr). Ref cited : 4 USP ; 1 BP. See also BP 796,832.

J *D 8.01*

USP 2,819,571 **F. F. L. Morgan, Holman Brothers Ltd** (Aug 29, 1955—conv date, Gt Britain)

Dust extraction systems for grinding wheels

The dust extraction head carries a bearing member, preferably a roller, which is in contact with the surface being ground to locate the head in relation to the work and also to take the weight of the head, *eg* in portable and swing grinders. An aero-foil section strip may be attached to deflect the dust into the mouth of the head. The head is connected to a source of suction of about 5 feet of water so as to suck the dust particles through the mouth and a filter to a dust receptacle. The head may further be provided with a tungsten carbide stop which makes contact with the grinding wheel when the head is moved towards the wheel. (8 claims, 4 illustr). Ref cited : 5 USP. *J* *C 5.01 : D 7.01*

USP 2,820,746 (Nov 25, 1953) **G. F. Keeleric**

Method of making an abrasive tool

The arrangement of diamond particles in a certain geometrical cutting pattern in low density of coverage, and so oriented that their long axes are normal to the working surface, is desirable because of the great increase in cutting speed. This result is obtained by coating a metal blank with a thin layer of adhesive (Araldite) and placing a pattern screen with slotted openings quite near (0.005 in.) to the tool blank, then placing a second pattern screen with narrower openings arranged to cross the first openings over the first screen so that openings remain at the intersection of the screens. Now the abrasive particles are propelled by electrostatic means through the openings onto the adhesive, and are finally surrounded by metal deposited on the tool blank. The ring of electrodeposited metal is then stripped away from the blank and carries the abrasive particles in it. The tool blank is cleaned and can be used for the further production of grinding rings. (2 claims, 20 illustr). Ref cited : 14 USP ; *Organic Finishing* 1952. See also USP 2,368,473.

J *D 8.01*

USP 2,822,254 (Apr 22, 1955) **G. J. Goepfert, C. v. Doenhoff, Carborundum Co**

Nitrile rubber bonded abrasive modified by a diketone

It has previously been suggested that grinding wheels could be made with a nitrile rubber (USP 2,384,683 and 2,229,880), but their use is limited by the smoke and fumes emitted when dry grinding due to the breakdown of the bond by the grinding heat. It has been found that certain types of diketones (alpha diketones) have the ability to overcome the fumes. From the practical standpoint there is a critical range of the diketone which should be added. Preferably, the diketone should constitute 1% of the total composition, and not more than 4% of the weight of the wheel. (10 claims). Ref cited : 1 USP. *J* *D 8.01*

USP 2,822,255 **C. A. Redfarn** (July 19, 1954—conv date, Gt Britain)

Manufacture of abrasive articles

The usual phenol formaldehyde resin bond for grinding wheels has some drawbacks. Owing to the frictional heat, the bond breaks down and the abrasive particles, diamond dust, carborundum, boron carbide, or spinel, are loosened and lost. Owing to the rigid nature of the bond, resistance to breakdown, especially at elevated temperatures, is poor. It appears that polyphosphonitrilic chlorides form a useful material as a bond for abrasive wheels, etc, to be further polymerized *in situ* as they are of good thermal stability. Certain modified polyphosphonitrilic chlorides may also be used. (13 claims). Ref cited : 4 USP.

J *D 8.01*

SURFACE FINISH TESTING

Piezo-electric method of measuring surface roughness

I. V. Dunin-Barkovskii. *Vestnik Mash* 1958 Vol 38 (7) p 61 (Original in Russian)

X *D 15.4*

Experience of Gorky Automobile Plant in improving the surface smoothness and finishing operations

B. F. Eremin. *Trudy Sem Po Kach Poverkh* 1957 (3) pp 241-250 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3050 (Feb) (Original in Russian)

X *C 5.0 : C 13.0*

Improving surface smoothness in grinding

G. F. Kudasov. *Trudy Sem Po Kach Poverkh* 1957 (3) pp 76-96 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3050 (Feb) (Original in Russian)

X *C 5.0*

Smoothness and wear resistance of surfaces subjected to grinding

A. A. Matalin. *Trudy Sem Po Kach Poverkh* 1957 (3) pp 186-201 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3051 (Feb) (Original in Russian)

X *C 2.23*

Investigating the occurrence of roughness caused by cylindrical grinding

L. I. Zalkind. *Trudy Sem Po Kach Poverkh* 1957 (3) pp 97-113 ; *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (11) p 3050 (Feb) (Original in Russian)

X *D 15.4*

MISCELLANEOUS

Clinical aspects of occupational neuritis in workers of the diamond industry

N. B. Metlina. *Gig i San* 1957 Vol 22 (6) pp 81-82 (June); *Library of Congress Mthly Index Russ Access* 1958 Vol 10 (10) p 2752 (Jan) (Original in Russian)

X *C 2.3*

BP 798,080 **Simili Fabrik Feiner Schleifprodukte Anstalt**

(Sep 29, 1954—conv date, Austria)

Imitation gems consisting of glass, transparent plastics or the like

The base of the gem carries a coating of a highly reflective metal or metal alloy (silver, chromium, rhodium, Hochheim alloy, or a layer of metal compounds such as oxides, sulphides, and fluorides). The layer should have a thickness of one quarter of the wavelength of visible light, or a multiple thereof, and several layers may be used (interference layers). The outside is covered with a transparent protective layer (silicon dioxide) of half the wavelength, or a multiple of half the wavelength, of the incident light. The gem should be mounted in an open setting so that the base is exposed to view. It is said that such gems are not immediately recognisable as imitations. (14 claims, 1 illustr). *J* *C 2.01*

PUBLICATIONS RECEIVED

TRADE LITERATURE HOLDINGS

Readers are requested to note that trade literature reviewed in this journal is not available for loan, nor is it displayed in the Information Bureau's Library. Readers wishing to obtain copies of the catalogues are requested to apply to the address which appears immediately under the title of the review.

BOOK REVIEW

British Guiana Geological Survey—Diamond resources of British Guiana

E. R. Pollard, C. G. Dixon, R. A. Dujardin. The Argosy Co Ltd, Georgetown, Demerara. 1957, 45 pp. Price $1.—

The book is divided into two long chapters, the first of which deals with the history of discovery, geographical distribution, mode of occurrence, origin of the diamonds, production, character of the British Guiana diamond, methods of extraction, and future possibilities. The second chapter covers the various diamond fields, *ie* the Mazaruni Field, the Potaro Field, the Cuyuni River, and the North-West District.

The present average size of British Guiana diamonds is about 10/ct, and the proportion of gems to industrials is about 3 : 1. Octahedra and dodecahedra are common.

The illustrations contained in a folder at the back of the book are as follows : (*i*) an index of the Guiana Highlands ; (*ii*) sections through the Putareng-Enachu terrace belt ; (*iii*) a graph showing diamond production in British Guiana from 1901 to 1956 ; (*iv*) the Jig-Jig sieving apparatus ; (*v*) diamond field localities in British Guiana ; (*vi*) the Mazaruni Field ; (*vii*) graph showing Mazaruni diamond production ; (*viii*) alluvial deposits of the Kurupung Field ; (*ix*) Kurupung-Meamu Fields ; and (*x*) the Potaro Field. *W* *C 1.23*

TRADE LITERATURE

American standard identification code for diamond wheel shapes

American Standards Association Inc, 70 E 45th St, New York 17, NY. 1957, 14 pp, 8½ × 11 in., illustr. Price : 75 Cents

This new American Standard, approved in 1957, illustrates the standard wheel shapes accepted by US diamond grinding wheel manufacturers, and explains the code number identification system. It is illustrated throughout. *W* *D 8.0*

Standard shapes and sizes of grinding wheels : Simplified practice recommendation R 45-57 (supersedes R 45-47)

Grinding Wheel Institute, 2130 Keith Bldg, Cleveland 15, Ohio. 76 pp, 8½ × 11 in., illustr

This edition supersedes the 1947 edition and incorporates the following changes : improved format, the addition of five new wheels and the elimination of one old one, asterisk indication of sizes for new machine design has been dropped, kinds of bonds are no longer indicated in many tables, and a number of adjustments have been made in the sizes of wheels. A list of US manufacturers who have accepted the standards is appended at the back of the catalogue.

W *D 8.0*

'Diagrit' diamond impregnated tools for glass, ceramics and hard materials

Autoflow Engineering Ltd, Lawford Road, Rugby. 17 pp, 5¾ × 9 in., illustr

A handy loose-leaf catalogue lists diamond-impregnated tools for glass, ceramics, and other hard materials. Information on ordering is given, and a list shows the diamond grades available in mesh sizes with the micron equivalent. Advice on mounting, speeds and feeds, coolants, and cleaning is given. The distributors, Autoflow Engineering Ltd, offer truing, forming, and diamond salvaging services.

W *C 7.0 : C 8.0 : C 8.72*

Mounted wheels

Bay State Abrasive Products Co, Westboro, Mass. 29 pp, 8½ × 11 in., illustr

A fully illustrated booklet describes the range of grinding wheels, including diamond wheels, available from the Company. All standard shapes are illustrated, and information on mesh sizes and bonding materials is included. Tables prepared by the manufacturers assist in the selection of wheels.

W *D 8.0*

1958 Directory of Special Tooling Services offered by NTDMA members

National Tool & Die Manufacturers Association, 907 Public Square Building, Cleveland 13, Ohio. 71 pp, 5½ × 7½ in.

Names and addresses are given of US companies offering special tooling services. The sections include cutting tools and grinders.

W *C 5.0 : C 6.0*

Pressurelok—Catalog 957

United States Diamond Wheel Co, 835 Illinois Ave, Aurora, Ill. 18 pp, 8½ × 11 in., illustr

The United States Diamond Wheel Co specialises in the manufacture of diamond wheels with Pressurelok bonding. The types of bond available are described, and diagrams and specifications of the wheels are given. Advice on ordering is offered.

W *D 8.0*

Save . . . $ $ $

Harvill Machine Co, 618 E 10 Mile Road, Hazel Park, Mich.

The Harvill Machine Co has developed a machine to grind carbide throwaway tips of any shape, *eg* squares, diamond shapes, triangles, pentagons, rounds, and rectangles. The entire periphery of the tool is ground in one operation, and all radii are ground perfectly tangential to the sides of the throwaway. It will grind positive and negative tools. By grinding the throwaway in one operation, all the flats and radii are held uniform, thus insuring 100% uniformity of the tool. The machine will grind used throwaways as well as new tools, so that they can be re-used at a fraction of their original cost. *W* *C 12.21*

Which abrasive cut-off wheel is the right wheel ?

E. J. De Witt. Wallace Supplies Manufacturing Co, 1300 Diversey Parkway, Chicago 14, Ill. 30 pp, 6 × 9 in., illustr

Silicon carbide and aluminium oxide cut-off wheels for metal cutting are described, and instructions are given for their selection and use. Typical cutting operations and workpieces are illustrated.
W *C 12.0*

Collected catalogues [Mindrill diamond bits]

Mindrill Ltd, 86-106 Plenty Road, Preston N 18, Victoria, Australia

Catalogues are now available which describe the latest in the Mindrill series of Mintung diamond-impregnated core bits and oriented diamond core bits, casing shoe bits, and casing reamer shells. Concentric and cross groove core bits, utilizing diamonds of 100-220/ct, are designed for the penetration of hard, straight ground formations at high speeds. The gauge stones are of a larger size in order to maintain core and hole size.
W *C 9.21*

Gardner flat surface disc grinders and abrasive discs, condensed general catalogue

Gardner Machine Co, Beloit, Wisc. 8½ × 11 in., 24 pp, illustr

In addition to a selection of disk grinders from the Gardner range, notes are given on their use and the operations for which they are designed. The double spindle grinders incorporate an improved truing attachment. A description of automatic truing on disk grinders is provided ; this operation requires the use of a diamond rather than a cutter as the truing tool.
W *C 5.0*

PATENT LISTS

BRITISH

The Official Journal (Patents) 1958 (3620) (July 2)

800,449 CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Spark discharge machining apparatus.

800,450 CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Spark machining apparatus.

800,456 FIRTH STERLING INC. Spark machining method and apparatus.

800,469 MONTRES ROLEX SA. Bearing for a time-piece.

The Official Journal (Patents) 1958 (3621) (July 9)

800,887 CHERREAU, R. Stone saws.

800,908 WHITTENBERG, G. R. Work-supporting means for centreless grinding machines.

800,764 GEAR GRINDING MACHINE CO. Means facilitating the positioning of work on a work holder preparatory to the form grinding of same.

The Official Journal (Patents) 1958 (3623) (July 23)

801,670 HOLDING ELECTROSONIC SA. Apparatus for cleaning articles such as watch parts by means of ultrasonic vibrations.

UNITED STATES

Official Gazette 1958 Vol 731 (1-4) (June)

2,836,939 A. H. WHITE. Machine for producing spherical surfaces.

2,837,416 G. ERVIN jun, NORTON CO. Vitrified bonded silicon abrasive articles.

2,837,878 N. E. JOHNSON, O. M. JOHNSON. Abrading wheels with undercut relief grooves.

2,838,040 H. E. BALSIGER, C. E. TOLBERT, LANDIS TOOL CO. Dresser for multiple grinding wheels.

2,838,041 M. ROVIS. Marble cutting and finishing machine.

2,838,284 B. L. AUSTIN, CHRISTENSEN DIAMOND PRODUCTS CO. Rotary drill bit.

2,838,286 B. L. AUSTIN, CHRISTENSEN DIAMOND PRODUCTS CO. Rotary drill bit.

2,838,652 C. P. PORTERFIELD, FIRTH STERLING INC. Method and apparatus for spark machining.

2,838,891 G. L. HAYWOOD, NORTON CO. Coated abrasives.

2,839,413 K. M. TAYLOR, CARBORUNDUM CO. Refractory body containing boron nitride.

2,839,871 L. M. AUSTIN, OWENS-ILLINOIS GLASS CO. Glass rod and tube cutting mechanism.

2,839,872 L. E. CLINE, OWENS-ILLINOIS GLASS CO. Glass and tube severing apparatus.

2,839,873 M. L. BAXTER, GLEASON WORKS. Method and machine for making curved tooth gears.

2,839,875 A. RICKENMANN, REISHAUER-WERK-ZEUGE AG. Machine for the grinding of cylindrical, conical and crowned spur gears and helical gears by the generating principle.

2,839,917 R. A. WEBSTER, WEBSTER INSTRUMENT INC. Hardness testing machine.

2,840,348 C. V. TILDEN. Drill bit.

SOUTH AFRICAN

Official Journal 1958 Vol 11 (21-25) (May-June)

2672/57 J. VAN TILBURG. Process for the manufacture of diamond from graphite.

4172/57 L. G. OXFORD, SIMMONDS ACCESSORIES LTD. Cutting and abrading tools.

4173/57 G. N. HALL, SIMMONDS ACCESSORIES LTD. Abrading tools.

4290/57 S. H. ROGER, A. J. MILLER, J. J. CALAMAN, UNION CARBIDE CORP. Thermal rock piercing control apparatus.

222/58 R. A. CRESSWELL, J. R. BRADSHAW, AFRICAN OXYGEN LTD., BRITISH OXYGEN CO. LTD. Method and apparatus for electric arc erosion. (Add 2790/57).

1782/57 R. W. DITCHBURN, P. T. WEDEPOHL, C. D. CLARK, INDUSTRIAL DISTRIBUTORS (1946) LTD. Method of altering the properties of type IIb diamonds.

1241/57 J. F. H. CUSTERS, H. B. DYER, P. T. WEDEPOHL, DE BEERS CONSOLIDATED MINES LTD. Polishing hard crystalline carbon.

AUSTRALIAN

Official Journal 1958 Vol 28 (15-19) (May-June)

214,513 P. SHAW. Rock-drill apparatus and method.

SWISS

Patentliste 1958 (10-11) (May-June)

330,210 G. FEFER, D. W. RUDORFF, SPARCATRON LTD. Device for the electroerosive machining of electrically conductive materials.

330,231 O. GROLL, VEB CARL ZEISS JENA. Machine tool for machining rotating bodies.

330,531 A. RAZDEW. Method of controlling the profile of a workpiece, and device for carrying out this method.

330,580 C. A. TAYLOR, RAWLPLUG CO LTD. Drilling bit.

330,581 T. B. PHILIP, R. HAMILTON-PETERS, DISTILLERS CO LTD. Lathe tool.

330,582 E. WIRZ, DIAMANTSCHLEIFEREI VOEGELI & WIRZ AG. Cutting tool for obtaining a high polish.

330,589 O. AMIET, CHRISTEN & CIE AG. Method of grinding drills, and machine for carrying out this method.

FRENCH

Bulletin Officiel 1958 Vol 75 (3868-71) (June-July)

1,164,677 H. GARIH. Adjustable tool bit holder and chip breaker.

1,164,771 SA DES MANUFACTURES DES GLACES & PRODUITS CHIMIQUES DE ST GOBAIN-CHAUNY & CIREY. Method and device for examining the interior of materials or their surface with regard to faults.

1,165,087 A. STIHL. Saw chain for power chain saws for cutting and slitting hard rock.

1,165,092 BISTERFELD & STOLTING. Method of machining the surface of metal workpieces, and apparatus for the application of the method.

1,165,108 BISTERFELD & SOLTING. Grinding tool.

1,165,810 CIE DES MEULES NORTON SA. Grinding disks for sawing concrete, and method of manufacture.

1,165,998 G. BORDERIE. Cutting table for panes of glass.

GERMAN

Patentblatt 1958 Vol 78 (25-28) (June-July)

Applications Open to Public Inspection

1,032,406 G. KOEHL, K. H. GRINSBACH, P. GUENTHER, LICENTIA PATENT-VERWALTUNGS GmbH. Method of making alloyed contacts on semiconductors.

1,032,524 R. S. DANIELS, A. J. MOSTELLO, UNION CARBIDE CORP. Phenolic resin-bonded grinding body, and method for its manufacture.

1,032,564 H. REDLICH, TELDEC TELEFUNKEN-DECCA SCHALLPLATTEN - GmbH. Method for recording sound by producing a grooved sound track for reproduction by a needle, and device for carrying out this method.

1,032,643 E. PARZ, VEB ZAHNSCHNEIDEMASCHINENFABRIK MODUL. Grinding worm for grinding the tooth flanks of normally toothed gear wheels provided with involute shaped teeth.

1,032,684 K. H. REICH. Grinding tool with a plurality of independent grinding bodies releasably connected to a common carrier.

1,032,725 E. H. AMSTEIN, BRITISH ALUMINIUM CO LTD. Method of making carbides, borides, boron carbides, and mixtures of borides and carbides, of titanium, zirconium, niobium, and tantalum, and device for carrying out the method.

1,032,852 T. RUMMEL, SIEMENS & HALSKE AG. Method and device for making semiconductive crystals according to the method of drawing crystals from a melt.

1,033,081 E. LOESCHNER, EISENWERK WUERTH GmbH vormals DEUTSCHE DIAMANT-STAHL-GmbH. Material for surface treatment of light metal parts by blasting.

1,033,156 K. BAYER, HWF HARTMETALL- WERKZEUG-FABRIK KARL BAYER & CO. Mining and drilling apparatus for mining purposes.

1,033,232 H. HERBERTS. Method for obtaining high hardness, toughness, wear resistance, and maintenance of cutting power for machine parts and cutting tools.

1,033,335 K-G GUENTHER, SIEMENS-SCHUCKERTWERKE AG. Method for making thin semiconductive layers from semiconductive compositions.

1,033,579 R. CLEVELAND, BENDIX AVIATION CORP. Method of making ceramic semiconductors, and semiconductors made according to this method.

AUSTRIAN

Patentblatt 1958 Vol 55 (4-6) (Apr-June)

197,495 VYSKUMNY USTAV PRE MECHANIZACIU A AUTOMATIZACIU. Switch arrangement for controlling the distance of the electrodes in the electroerosive machining of electrically conductive workpieces.

197,588 BIRMINGHAM SMALL ARMS CO LTD. Method for applying a carbide layer to a metallic body.

197,665 FIRTH STERLING INC. Device and method for machining workpieces by means of spark discharges.

197,666 VYSKUMNY USTAV PRE MECHANIZACIU A AUTOMATIZACIU. Arrangement for the automatic control of electroerosive plants.

197,714 ASCHAFFENBURGER MASCHINENFABRIK J. MODLER. Device for the centreless grinding of the enveloping surface of barrel-shaped rolls.

198,022 METALLWERK PLANSEE GmbH. Hard high melting sintered body.

198,099 FIRTH STERLING INC. Electroerosion method and device for carrying out the method.

198,238 WESTERN ELECTRIC CO INC. Method of producing materials mainly consisting of carbon.

198,592 VYSKUMNY USTAV PRE MECHANIZACIU A AUTOMATIZACIU. Electroerosive wire saw.

IDR REPRINT SERVICE

The new edition of the *Industrial Diamond Review* Reprint Service lists is available *gratis* from the Industrial Diamond Information Bureau, 2 Charterhouse St, London EC 1. The new list is a complete record of all reprints—*Industrial Diamond Review* articles, industrial diamond features from contemporary journals, and data sheets—held by the Information Bureau. Reprints contained in the list are available from the Industrial Diamond Information Bureau, at the above address. A charge of 1s per reprint is made as a contribution towards costs.

Important

It is important to note that in cases where reprints requested are not detailed in the new list, *ie* photostats and reprints specially obtained for readers, the charge will vary. The following reprints, included in the Reprint Service list, are a selection of *Industrial Diamond Review* articles which appeared in 1957:

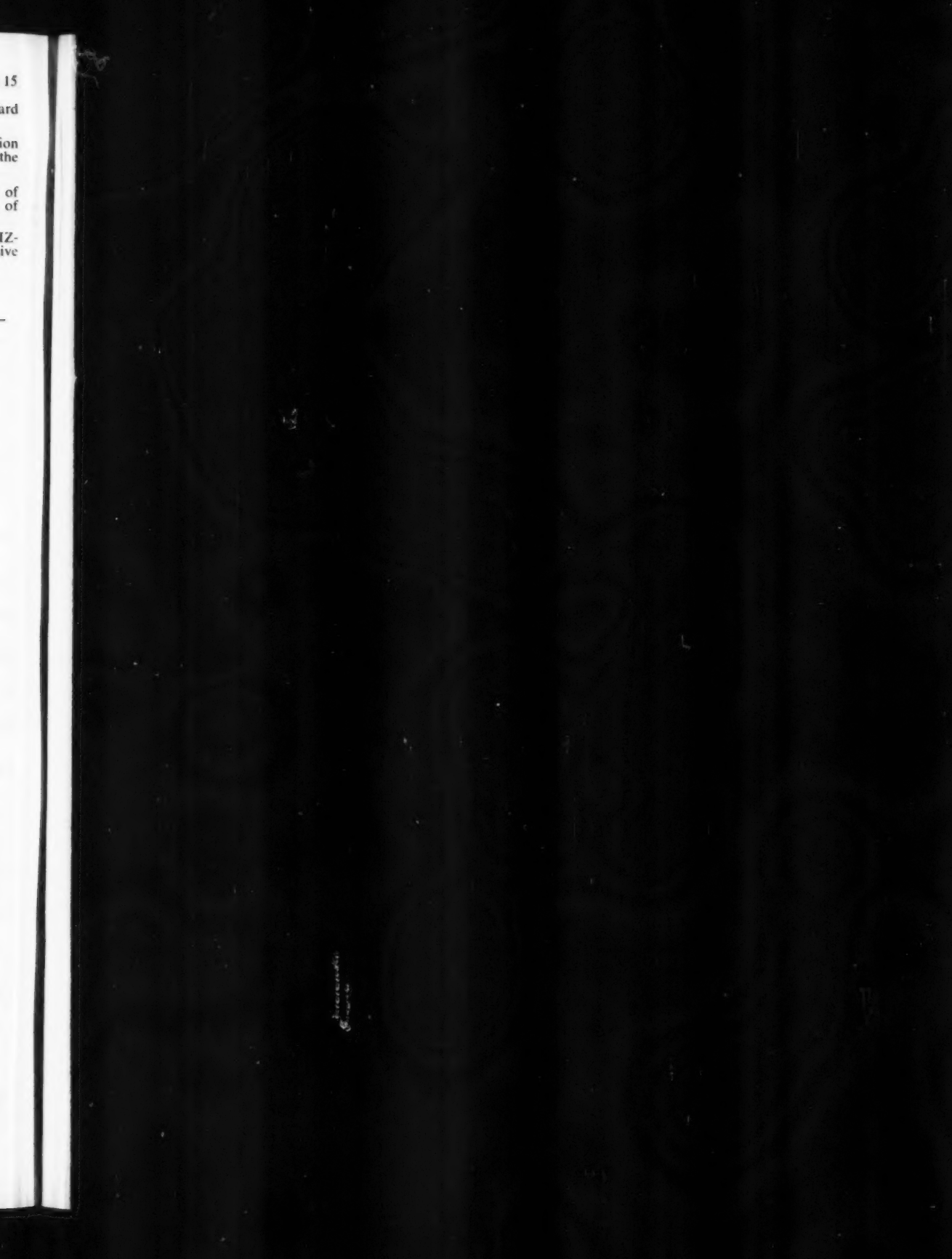
I 243—The reclamation of diamond powder from industrial wastes, by J. Abel.
I 244—Faster carbide grinding with metal-bonded diamond wheels, by J. W. Ripple.
I 245—The impact testing of hard metals, by W. Spaeth.
I 246—Production of sinter alumina cutting tools, by F. Singer and S. S. Singer.
I 247—Mechanized production of instrument jewels, by R. Humphrey and R. E. Leeds.
I 248—The selection of diamonds for industrial purposes, by G. P. Freeman.
I 249—Industrial diamonds from Panna, India, by S. M. Mathur.

X-RAY ORIENTATION OF DIAMONDS FOR DIAMOND TOOLS

A booklet of the above title has recently been published by the Diamond Research Laboratory, Johannesburg. The very latest developments in x-ray orientation are described, and the applications of the orientation process are dealt with. A limited number of copies is available, *gratis*, and those interested are advised to apply quickly whilst copies are available.

TRADE LITERATURE AND BOOKS FOR REVIEW

From time to time, notices appear in *Industrial Diamond Abstracts* inviting manufacturers to submit trade literature for review in this journal. Many manufacturers address such literature to Messrs NAG Press Ltd, and delay is occasioned when this has to be forwarded to our offices. Manufacturers are reminded that the address to which their publications should be sent is :

Industrial Diamond Information Bureau,
2 Charterhouse Street, London EC 1.

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